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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,991	08/23/2001	Jagannath Das	029034/281613 (INPC-102)	1338

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EXAMINER

ILDEBRANDO, CHRISTINA A

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 12/19/2002

5

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

21
Application No.

09/935,991

Applicant(s)

DAS ET AL.

Examiner

Christina Ildebrando

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 and 50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-39 and 50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I in Paper No. 5 is acknowledged. The traversal is on the ground(s) that the inventions are appropriately included in a single application as the claims recite inter-related subject matter. This is not found persuasive. The fact that the claims relate inter-related subject matter is not the test for distinctness, as set forth by the examiner in the previous office action. Further, restriction is proper if search and examination of the entire application cannot be conducted without serious burden. In this case, the search required for group I is not required for group II and vice versa. Therefore, examination of the entire application cannot be conducted without serious burden.

The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

2. Claims 11 and 35-37 are objected to because of the following informalities: claims 11 and 35 do not end with a period; claims 36-37, "family" is misspelled "familiy". Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-39 and 50 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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5. Claims 1, 21-22, and 50 recite the limitation "a modified metallosilicate catalyst composition comprising a mixture of amorphous silica, alumina and a pore size controlled metallosilicate." However, the process steps require modifying only the metallosilicate and do not positively recite the particulars of the composite. Therefore, it is not clear that the body of the claims requires the particulars of the composite. For search and examination purposes, the claims have been examined as modifying the metallosilicate only. Also, it is not clear whether the recitation "amorphous silica" refers to the modifying treatment or whether applicant is referring to the binder, i.e. a binder containing amorphous silica and alumina, as discussed in the specification.

6. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

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In the present instance, claim 10 recites the broad recitation "1 to 200 percent", and the claim also recites "preferably 2 to 100%, more preferably 5 to 90%" which is the narrower statement of the range/limitation. Claim 28 recites the broad recitation "1 to 99%", and the claim also recites "preferably 2 to 50%, more preferably 5 to 25%" which is the narrower statement of the range/limitation.

7. Claim 14 recites the limitation "as claimed in any of the claims 11." This recitation renders the claim indefinite because it is not clear if applicant intends a multiple dependent claim. For search and examination purposes, the claim has been examined as though dependent upon claim 11 only.

8. Claims 24 and 25 recites the compound "aminoalkytrialkoxo silane." It appears that the compound is misspelled and should be "aminotrialkoxy silane."

9. Claim 25 recites the compound "aminopropyl triethoxysilane." It appears that the compound is misspelled and should be aminopropyl triethoxysilane.

10. Regarding claims 36-37, the phrase "e.g. such as" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention or merely exemplary. See MPEP § 2173.05(d). For search and examination purposes, the recitations have been considered exemplary and are not considered to be required by the claim.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-2, 5, 7, 9-19, 21-23, 26-28, 30-37, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beck et al. in view of Felder et al.

Beck et al. (US 5,602,066) discloses a method for producing a selectivated zeolite catalyst. The method comprises the steps of: (a) contacting a catalyst comprising an intermediate pore size zeolite, such as ZSM-5, with an organosilicon compound under conditions sufficient to deposit a siliceous material on the catalyst; (b) calcining the organosilicon containing material in an oxygen containing atmosphere under conditions sufficient to remove organic material therefrom and leave the siliceous material on the catalyst; (c) directly washing the catalyst from step (b) with water; and (d) drying the washed catalyst from step (c) (columns 17-18, claim 1). It is taught that steps (a) and (b) are repeated at least once and further that step (c) is repeated at least once (column 18, claims 8 and 9, column 2, lines 43-45, and column 4, lines 50-56).

With regards to step (a) above, the organosilicon compound may be water soluble or water insoluble (column 4, lines 55-65 and column 5, lines 60-65). Examples of suitable compounds include silanes (column 5, lines 25-30). The organosilicon compound is present in the form of an organic carrier or water (column 4, lines 55-65). The use of 7.8wt% of organosilicon compound in decane is exemplified (column 15, Example 1). In an example, following step (a), Beck et al. teaches that the solvent is stripped (Example 1).

With regard to steps (c) and (d), Beck et al. teaches washing the catalyst in water, followed by drying and calcination at a temperature of at least 200 degrees C for

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at least one hour to more completely remove the residue of the liquid medium used to treat the catalyst (column 3, lines 40-50). In an example, Beck et al. teaches that washed extrudates are dried for 4 hours at 120 degrees C and calcined at 300 degrees C for 2 hours (column 15, Example 3).

Beck et al. further teaches that the present catalyst may include a binder material such as alumina, or silica, or alumina in combination with silica (column 14, lines 42-56).

Beck et al. differs from the instant claims in that Beck et al. does not teach specifically that the solvent is recovered, as required by claims 1, 21-22, and 50.

Felder et al. (*Elementary Principles of Chemical Processes*) teaches any reactant that is fed into a system and is unused represents wasted money. The reference proposed that if one could find a way to separate most or all of the unconsumed reactant from the product stream, one could then recycle the unconsumed reactance back to the reactor. While one would have to pay for the separation and recycle equipment, this would be offset by having to purchase less fresh reactant. Refer to page 106.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method Beck et al. in light of the teachings of Felder et al. to recover the solvent stripped from the selectivated catalyst such as for recycle. One would have been motivated to do so because of the teaching by Felder et al. that such a recovery/recycle is conventional and would result in a more economical process, i.e. one would not continually need to supply fresh solvent to the selectivation process.

With regards to claims 10 and 21, the modified disclosure of Beck et al. does not specifically teach the amount of water used during step (c). However, Beck et al. teaches the washing treatment results in a catalyst of increased activity and the washing treatment improves the catalyst by removing fines therefrom (column 3, lines 30-42). Therefore, it is considered that Beck et al. recognized the amount of water used during the washing step as a result effective variable. It would have been obvious to one having ordinary skill in the art at the time the invention was made to choose the instantly claimed ranges through process optimization, since it has been held that when the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See *In re Boesch*, 205 USPQ 215.

With regards to claim 19, the modified disclosure of Beck et al. does not specifically teach that the calcination temperature is in the range of from 400-500 degrees C. However, Beck et al. does teach that the selectivated catalyst is calcined following the washing and drying steps, at a temperature of at least 200 degrees C for at least 1 hour, to more completely remove the residue of the liquid medium used to treat the catalyst (column 3, lines 45-50).

With respect to the encompassing and overlapping ranges previously discussed, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time of invention to select the portion of the prior art's range which is within the range of the applicants' claims because it has been held prima facie case of obviousness to select a value in a known range by optimization for the results. Additionally, the subject matter as a whole would have been obvious to one of ordinary

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skill in the art at the time invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ. In this case, the reference teaches a range which overlaps the instantly claimed range and Beck et al. teaches that the purpose of the calcination step is to remove the liquid medium. One would have been motivated to optimize the temperature of the calcination step in order to completely remove the liquid medium, as suggested by the Beck et al. reference.

13. Claims 3-4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beck et al. in view of Felder et al. as applied to claims 1-2, 5-7, 9-19, 21-23, 26-28, 30-37, and 50 above, and further in view of Li et al.

Beck et al. in view of Felder et al. is applied as above for claims 1-2, 5-7, 9-19, 21-23, 26-28, 30-37, and 50.

The modified disclosure of Beck et al. does not teach that the organosilicon compound is a tetraalkoxy silane, specifically a tetraethoxy silane, as required by claims 3-4, or that the solvent is a mixture of toluene and methanol, as required by claim 6.

Li et al. (US 6,084,096) discloses a process for producing a selectivated ZSM-5 zeolite catalyst. The reference teaches that suitable selectivation agents include tetraalkoxy silanes, including tetraethoxy silane (column 3, lines 10-25). Li et al. further teaches that suitable solvents include aliphatic hydrocarbons as well as toluene and methanol (column 3, lines 25-35).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have further modified the method of Beck et al. to include the

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use of the selectivating agents and solvents taught by Li et al. The selection of a known material based on its suitability for its intended use has been held to be a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 65 USPQ (1945). In this case, Beck et al. suggests that any silane may be used and Li et al. specifically teaches tetraethoxy silane as a suitable silane for the selectivation of a ZSM-5 catalyst. With regards to the solvents, Li et al. suggests that methanol and toluene are suitable solvents and further discloses that these solvents are functionally equivalent and analogous to the solvents taught by Beck et al. It is considered that the substitution of art recognized equivalents would have been obvious to one having ordinary skill in the art. Li et al. does not specifically teach that a mixture of methanol and toluene is used; however, combining two or more materials for the same purpose to form a third material that is to be used for the same purpose has been held to be a prima facie case of obviousness. *In re Kerkhoven*, 205 USPQ 1069.

14. Claims 8 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beck et al. in view of Felder et al. as applied to claims 1-2, 5-7, 9-19, 21-23, 26-28, 30-37, and 50 above, and further in view of Beck et al. '004.

Beck et al. in view of Felder et al. is applied as above for claims 1-2, 5-7, 9-19, 21-23, 26-28, 30-37, and 50.

The modified disclosure of Beck et al. further does not teach the duration of the selectivation process, as required by claims 8 and 29.

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Beck et al. (US 5,365,004) details the preparation of a silicon-selectivated ZSM-5 catalyst. The reference details treatment with an organosilicon compound overnight.

Refer to the Examples,

It would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the method of Beck et al. in light of the teachings of Beck et al. '004. One would have been motivated to do so because Beck et al. '004 details the preparation of the product desired by Beck et al. because both process result in a selectivated zeolite catalyst, one would have reasonable expectation of success from the combination.

Claim Rejections - 35 USC § 102/103

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claim 20 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over any of Beck et al. (US 5,602,066) or Wu et al. (US 6,066,770).

Beck et al. (US 5,602,066) discloses a selectivated ZSM-5 catalyst which may be combined with a binder such as silica, alumina, or silica in combination with alumina (Abstract and column 14, lines 40-55).

Wu et al. (US 6,066,770) discloses a selectivated ZSM-5 catalyst which is combined with a binder such as silica-alumina (column 2, lines 3-21 and column 3, lines 30-50).

The disclosed products and the instantly claimed product appear to be essentially the same, comprised of the same components, i.e. a selectivated ZSM-5 catalyst, and are used in the same manner. In the event any differences can be shown for the product of the product-by-process claim 20 as opposed to the product taught by either Beck et al. or Wu et al., such differences would have been obvious to one of ordinary skill in the art as a routine modification of the product in the absence of a showing of unexpected results. See *In re Thorpe*, 227 USPQ 964 (Fed. Cir. 1985). Also, when the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to applicant to establish that their product is patentably distinct and not the examiner to show the same process of making. *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

Allowable Subject Matter

18. Claims 24-25 and 38-39 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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19. The following is a statement of reasons for the indication of allowable subject matter: regarding claims 24-25, the prior art of record does not teach or suggest the use of aminotrialkoxy silane as a selectivating agent, in combination with the other features instantly claimed. Regarding claims 38-39, the prior art of record does not teach or suggest the use of a Ga-Al-ZSM-5 having the instantly claimed silica/alumina and silica/gallia ratios instantly claimed, in combination with the other features instantly claimed.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Ildebrando whose telephone number is (703) 305-0469. The examiner can normally be reached on Monday-Friday, 7:30-5, with Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (703) 308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

CAI
December 16, 2002


TOM DUNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700